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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,991	01/21/2004	Wilfred Cadelina Jamison	RSW920030277US1	4291
36736	7590	02/05/2007		
DUKE W. YEE YEE & ASSOCIATES, P.C. P.O. BOX 802333 DALLAS, TX 75380			EXAMINER VU, TUAN A	
			ART UNIT	PAPER NUMBER
			2193	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/761,991	Applicant(s) JAMISON, WILFRED CADELINA	
	Examiner Tuan A. Vu	Art Unit 2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/21/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 1/21/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1/21/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is responsive to the application filed 1/21/2004.

Claims 1-23 have been submitted for examination.

Claim Objections

2. Claim 17 is objected to because of the following informalities: the recital of '...comprising the steps of:' (line 3) 'first instructions for obtaining...' (line 4) and 'second instructions for deducing ...' (line 6) amounts to a form of English construct otherwise perceived as awkward in the use of syntax or grammar. It is recommended that 'the steps of' be removed.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-5, 10-13 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 1 recites a method including obtaining information associated with garbage collection, and deducing changes in performance that will result from modifying the targeted Java program for improvement. As a whole, the claim lacks definite action in regard to the Java program being manipulated for application use as a consequence of interacting with the results from the deducing step. The claim does not convey application real-world result from any aspect of the intended Java program in terms that this program is being concretely modified; and thus, the claim cannot be construed as being able to yield a tangible application result because a

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computer-deduced data (or abstracted internal data) in the absence of any reasonable act taken for realizing such data into real-world application data (e.g. data tangible and useful for an user making use of the Java program) is perceived as a non-practical and abstract idea which is not translated into concrete, useful and tangible result.

The Federal Circuit has recently applied the practical application test in determining whether the claimed subject matter is statutory under 35 U.S.C. § 101. The practical application test requires that a “useful, concrete, and tangible result” be accomplished. An “abstract idea” when practically applied is eligible for a patent. As a consequence, an invention, which is eligible for patenting under 35 U.S.C. § 101, is in the “useful arts” when it is a machine, manufacture, process or composition of matter, which produces a concrete, tangible, and useful result. The test for practical application is thus to determine whether the claimed invention produces a “useful, concrete and tangible result”.

Claim 1 is therefore rejected for leading to non-statutory subject matter.

Claims 2-5 amount to further non-functional descriptive entities, thus not remedying to the above lack of application interaction so to yield a result as required by the Practical Application Test; hence are also rejected.

Claim 10 recites a system capable of running a program comprising a heap associated with Garbage collection events and instructions for estimating changes in performance from modifying the program using information obtained from the above events. There is insufficient teaching that the system possesses instructions being embodied in a storage medium to execute the changes to the Java program based on the collected events; and there is not sufficient hardware embodiment to support the functionality of the instructions recited for estimating changes in the Java performance. A system lacking hardware support to enable the functionality of software instructions to interact the Java program with the heap-stored events or to enable the estimating action to realize in order to enable the Java program changes is construed as not able to realize a real-world result in terms of concrete, useful and tangible result. That is, software

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functionality in the absence of tangible hardware embodiment to support the realization of such functionality is considered non-statutory.

Claim 10 is rejected for leading to non-statutory subject matter because it fails to reasonably fulfill the practical application result requirement as set forth above.

Claims 11-13 are also rejected for failing to remedy to the deficiencies of the base claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-3, 5-11, 13-19, 21-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Coha et al., USPubN: 2003/0182597– now issued as USPN: 6,804,691 (hereinafter Coha).

As per claim 1, Coha discloses a method of improving performance in a Java computer program, comprising the steps of: obtaining information associated with garbage collection (e.g. Fig. 2A; para 0023-0031, pg. 2); and deducing changes in performance (e.g. Fig. 3; para 0040, pg. 3; Fig. 5; para 0069, pg.4; step 250 - Fig. 2B) that will result from modifying the Java computer program.

As per claim 2, Coha discloses that a cost of garbage collection to program performance is estimated using a duration of an average garbage collection event and a frequency of garbage collection events (e.g. para 0037, pg. 3; para 0058-0059, 0063, pg. 4).

As per claim 3, Coha discloses wherein the cost of garbage collection is reduced by reducing either or both of the duration and frequency (e.g. *how much time was spent* - para 0039-0040, pg. 3; para 0069, pg. 4; para 0075-0077 – Note: tuning parameters based on garbage collection time usage reads on optimizing code by alleviating time spent in garbage collection).

As per claims 5-6, Coha discloses wherein the frequency depends on the rate of object creation (e.g. *rate* - para 0038, pg. 3; para 0056, pg. 4; para 0047, pg. 3; para 0054, pg. 4), the heap fragmentation, the size of the heap (para 0067-0068, pg. 4 – Note: heap usage and unreferenced data therein reads on amount of fragmentation of garbage collectable data and freeing– see para 0032, pg. 2), and the garbage collection policy (para 0042,pg. 3); wherein the Java computer program is changed (e.g. step 260, Fig. 2A) by reducing memory from a footprint (para 0064, pg. 4; Fig. 2A) of the Java computer program.

As per claim 7, Coha discloses wherein given the amount of memory to be reduced from the footprint(Fig. 2A), a total duration for a run (Fig. 3-4), and how much of the run is spent in garbage collection (para 0039, pg. 3; para 0059, pg. 4), the number of additional transactions that can be computed during the run is determined (para 0050-0064, pg. 4; para 0023-0030, pg. 2).

As per claims 8-9, Coha discloses a *verbosegc* (para 0031, pg. 2) and the step of modifying the Java computer program (Fig. 2A).

As per claim 10, Coha discloses computer system capable of running a Java program, comprising:

a garbage heap associated with garbage collection events, wherein garbage collection

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events have an average duration and frequency (e.g. para 0037, pg. 3; para 0058-0059, 0063, pg. 4);

instructions for estimating changes in performance (Fig. 3; para 0040, pg. 3; Fig. 5; para 0069, pg.4; para 0076-0077, pg. 5) resulting from modification of the Java program using information obtained about the garbage collection events (e.g. *user may then change the value ... user can change the JVM ... desired heap parameters* - para 0041-0049, pg. 3-4).

As per claims 11, 13-16, refer to corresponding rejections as set forth in claims 3, 5-8 respectively.

As per claim 17, Coho discloses a computer program product in a computer readable medium for improving performance in a Java computer program, comprising the steps of:

first instructions for obtaining information (e.g. Fig. 2A; para 0023-0031, pg. 2) associated with garbage collection;

second instructions for deducing changes (e.g. Fig. 3; para 0040, pg. 3; Fig. 5; para 0069, pg.4; step 250 - Fig. 2B; *accounting for changes, assumptions* - para 0075-0076, pg. 5) in performance that will result from modifying the Java computer program;

wherein the Java computer program is changed by deducting memory (Fig. 2B- Note: running a instance of GC reads on deducting memory) from a footprint of the Java computer program.

As per claims 18-19, 21-23, refer to corresponding rejections as set forth in claims 2-3, 5, 7, 8 respectively..

Claim Rejections - 35 USC § 103

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7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 4, 12, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable under Coha et al., USPubN: 2003/0182597, in view of Sumit Chawla, 'Fine-tuning Java Garbage collection performance', 01 Jan 2003, pp. 1-10; (hereinafter Chawla - url: <http://www.128.ibm.com/developerworks/ibm/library/i-gctroub/>).

As per claim 4, Coha discloses parameters on heap analysis (timing information - Fig. 2A, 2B; Fig. 4) for a chosen garbage collection execution (e.g. para 0042-0043, pg. 3) hence has disclosed that the duration depends on an amount of garbage that must be cleaned up (e.g. para 0023-0030, pg. 2), an algorithm used to do the collecting or copying, a heap compaction (para 0074-0077, pg. 5 – Note: simulation by using dynamic heap behavior information for improved collection of unreferenced data reads on selecting algorithmic approach for better compaction or a cost of reconciling object references that are moved.

But Coha does not specify that such duration of garbage collection depends on a number of finalizers that must be executed. The concept of garbage collection being delayed and timely affected by negative impact created by the concurrent *finalizers* processes was a known concept considered by many heap compaction and JVM runtime optimization techniques and this is disclosed in the *verboseGc* -based method by Chawla (e.g. *allocations inside the finalizers* - pg. 6, avoid finalizers - pg. 9). Based on Coha's study to obviate the duration and frequency of garbage collection via repeated simulations (see Fig. 2, 4, 5; 0023-0030, pg. 2), it would have

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been obvious for one skill in the art at the time the invention was made, in view of the verboseGc tool by Coha, to also put under consideration the negative effects of finalizers execution in a way to obviate their usage -- as taught by the warning by Chawla; because the additional time consumed for the garbage collector to keep track of the un-predetermined memory allocation changes happened inside the *finalizers* by way of their internal operations can affect the attempt to improve resource intent for a concurrent garbage collector as endeavored by Coha (see para 0052-0063, pg. 4); that is, the garbage collection time thereof would be unnecessarily elongated because of the finalizers as put forth in Chawla's recommendation as to avoid *finalizers*.

As per claims 12 and 20, refer to the rationale of rejection as set forth in claim 4.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan A Vu whose telephone number is (272) 272-3735. The examiner can normally be reached on 8AM-4:30PM/Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571)272-3756.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273-3735 (for non-official correspondence - please consult Examiner before using) or 571-273-8300 (for official correspondence) or redirected to customer service at 571-272-3609.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tuan A Vu
Patent Examiner,
Art Unit 2193
January 28, 2007